WHAT IS CLAIMED:

1. A method for measuring the conductivity (σ) of a liquid or paste electrophotographic toner comprising:

providing two parallel plane conductive plates with a uniform separation (d) between the plates to form a space between the plates;

filling the space between the plates with liquid or paste electrophotographic toner;

applying a voltage of at least 1V between the plates across the liquid or paste toner;

measuring as data the current vs. time passing through the plates;

digitizing the data;

sending digitizing data to a processor; and

determining the conductivity from the digitized data.

2. The method of claim 1 wherein determining conductivity and charge per mass from the digitized data includes determining toner particle current according to the relationships:

$$i = i_1 + i_2$$

where $i_1 = af'(t)$

and $i_2 = i_0 \exp(-t/\tau_2)$

$q = af(t)$

$i_1 = af'(t)$

$a^2 = 2\varepsilon\zeta A^2 V_0$

$\tau = (R+R_2)(2\varepsilon\zeta A^2)$

$f(t) = (e^{2at/\tau} - 1)/(e^{2at/\tau} + 1)$
$f'(t) = (a/\tau)(1 - f^2(t))$

$R = d / \sigma A$,

$i_2 = i_0 \exp(-t/\tau_2)$

Q/M (charge per mass)= $\zeta/\rho\alpha$, where ρ is the toner paste density and α is the paste concentration;

Wherein the terms in the Formulae affected are defined as	Symbol or letter	Meaning
$Q=af(t)$	q	Total toner charge accumulated on plate **6** at time t
	a	Square root of formula $a^2=2\varepsilon\zeta A^2V_0$ defined below
	f(t)	Function of time
$i_l=af'(t)$	i_l	Toner particle current
	a	Square root of formula $a^2=2\varepsilon\zeta A^2V_0$
	f'	Derivative of f, above
	t	Time
$a^2=2\varepsilon\zeta A^2V_0$	a^2	A parameter defined by solving the adjacent formula
	2ε	Two times the dielectric constant of the toner ink/paste
	ζ	Toner charge density
	A^2	The area of the plate, squared
	V_0	Applied voltage
$\tau=(R+R_2)(2\varepsilon\,\zeta A^2)$	τ	A parameter defined by solving the formula
	R	Derived from $R=d/\sigma A$, defined below
	R_2	Resistance of resistor R_2,
	2ε	Two times the dielectric constant of the toner
	ζ	Toner charge density
	A^2	The area of the plate, squared
$R=d/\sigma A$	R	A parameter defined by solving the adjacent formula
	d	Separation between plates/distance

	σ	Conductivity of the ink/paste
	A	Area of the plate
$f(t)=e^{2at/\tau}-1)/(e^{2at/\tau}+1)$	f(t)	Definition of the function of time
	e	Natural logarithm
	$2at/\tau$	Solve using symbols defined above
$f'(t)=a/\tau)(1-f^2(t))$	As defined above	
$i_2=i_0\exp(-t/\tau_2)$	i_0	The initial impurity current
	τ_2	The impurity migration time constant

3. The method of claim 1 wherein the voltage is between 50V and 1000V.

4. The method of claim 1 including calculating the charge to mass ratio of the toner (Q/m) from ζ by assuming that the percent solids of the toner particles collected on the ground plate is the same as that collected on a development roller under a similar electroplating condition, wherein ζ is the associated charge density.

5. The method of claim 2 including calculating the charge to mass ratio of the toner (Q/m) from ζ by assuming that the percent solids of the toner particles collected on the ground plate is the same as that collected on a development roller under a similar electroplating condition, wherein ζ is the associated charge density.

6. The method of claim 3 including calculating the charge to mass ratio of the toner (Q/m) from ζ by assuming that the percent solids of the toner particles collected on the ground plate is the same as that collected on a development roller under a similar electroplating condition, wherein ζ is the associated charge density.

7. A method for measuring the conductivity (σ) of a liquid or paste electrophotographic toner comprising:

providing two parallel plane conductive plates with a uniform separation (d) between the plates to form a space between the plates;

filling the space between the plates with liquid or paste electrophotographic toner;

applying a current voltage of at least 1V between the plates across the liquid or paste toner;

measuring as data the current passing through an external component into the plates;

adjusting the data to remove current contributions attributable to impurity ions;

sending adjusted data to a processor; and

determining the conductivity from the adjusted data.

8. The method of claim 7 wherein the voltage is between 1V and 1000V.

9. The method of claim 7 including calculating the charge to mass ratio of the toner (Q/m) from ζ by assuming that the percent solids of the toner particles collected on the ground plate is the same as that collected on a development roller under a similar electroplating condition, wherein ζ is the associated charge density.

10. The method of claim 8 including calculating the charge to mass ratio of the toner (Q/m) from ζ by assuming that the percent solids of the toner particles collected on the ground plate is the same as that collected on a development roller under a similar electroplating condition, wherein ζ is the associated charge density.

11. An apparatus for measuring the conductivity of a liquid or paste toner comprising:

two parallel conductive plates (**4**, **6**), an electrical switch (**10**) between the plates, a power supply (**12**) between the electrical switch(**10**) and one of the two conductive plates, a current sensor for measuring data relating to current (**14**), filter (**16**), a digitizer (**18**), data storage and processor (**20**) having analytic capability for adjusting

the data relating to current to remove contributions to the data attributable to impurity ions.

12. The apparatus of claim 11 wherein a data digitizer (**18**) is present between the sensor and the data storage and processor having analytic capability (**20**).

13. The apparatus of claim 11 wherein the switch is a high speed switch.

14. The apparatus of claim 11 wherein the switch is a bounceless switch.

15. The method of claim 7 wherein the voltage is between 50V and 1000V.

16. The method of claim 7 wherein the voltage is between 100V and 1000V.